

THE



Swai

HANDBOOK



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Western Edge
SEAFOOD



The Fish People

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Mekong River Delta

<http://www.asia-trip.info/mekong-river.html>

What Is SWAI?

“Swai” is a species of finfish that has become commercially important throughout the world since the 1990s. It has experienced rapid acceptance within the seafood industry in the USA, Europe, and many other countries. The growing popularity and widening acceptance as a seafood choice is owed to its attributes of being a white-fleshed fish with a light flaky texture, mild flavor, and economical price point.

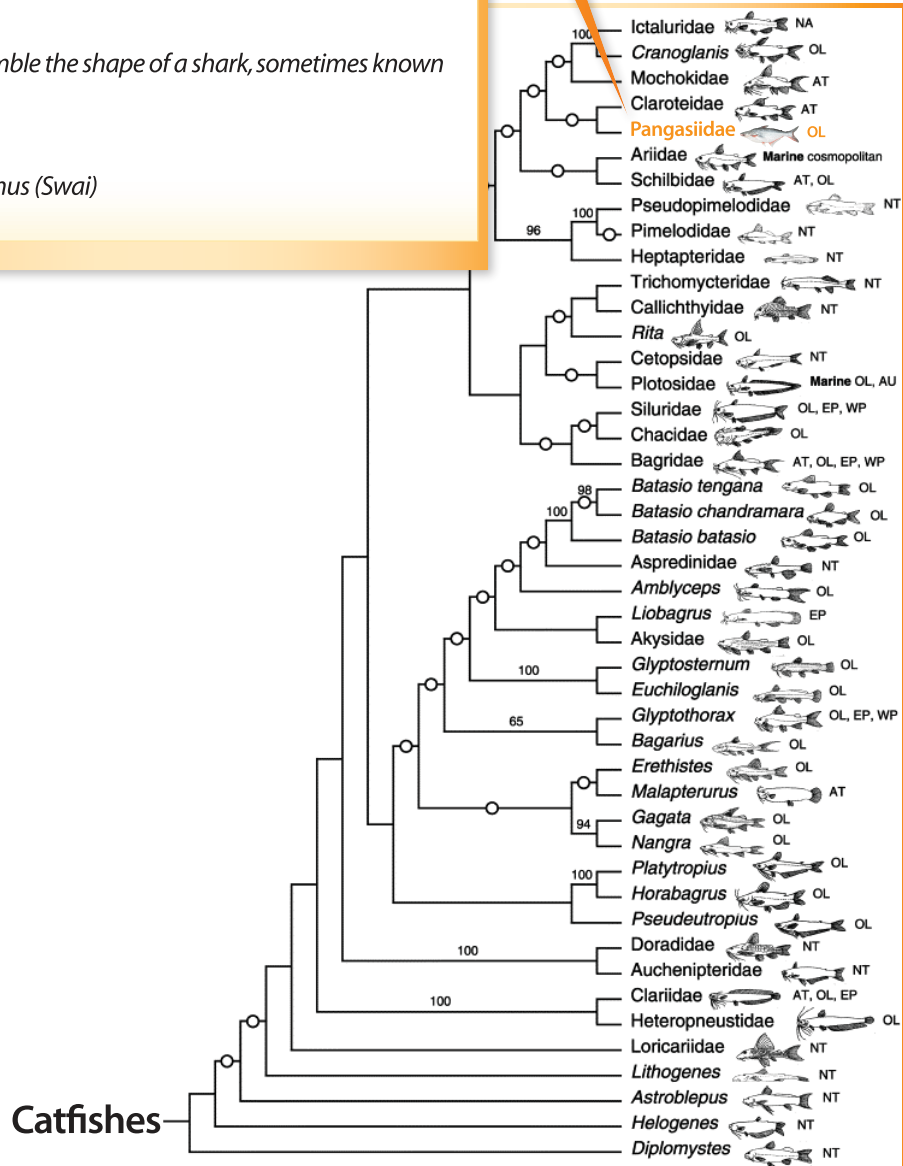
Swai is native to the freshwater environments found in Southeast Asia. It lends itself well to aquaculture because of its robust rate of growth and tolerance for farming densities. Swai realizes an efficient “conversion ratio” of feed into harvestable body weight making it attractive to farmers as an aquaculture crop.

*Swai is scientifically known as *pangasianodon hypophthalmus* and is found in the scientific “Order” of Siluriformes. The Order of Siluriformes is known to biologists as “catfishes”. Within the siluriformes class of fishes, there are several types of catfish including the American Channel Catfish and Swai. Swai is sometimes called “Basa” but basa is actually a relative of swai with the similar scientific name of *pangasius bocourti*.*

SWAI FAMILY TREE



- Kingdom:** Animalia
- Phylum:** Chordata (Animals with spinal cords)
- Class:** Actinopterygii (Ray Finned Fish)
- Order:** Siluriformes (Catfish)
- Family:** Pangasiidae (Catfish that resemble the shape of a shark, sometimes known as Shark Cats, or Iridescent Sharks)
- Genus:** Pangasianodon
- Species:** Pangasianodon Hypophthalmus (Swai)



Source: <http://www.sciencedirect.com/science/article/pii/S1055790305001727>

Swai vs. Basa vs. Catfish

Swai (*pangasianodon hypophthalmus*) is closely related to Basa (*pangasius bocourti*). Both are members of the siluriformes family of catfishes.

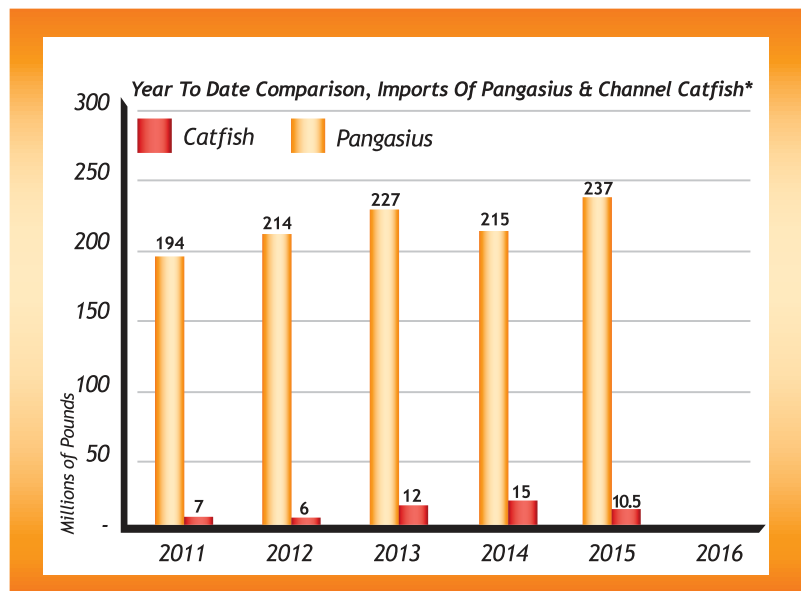
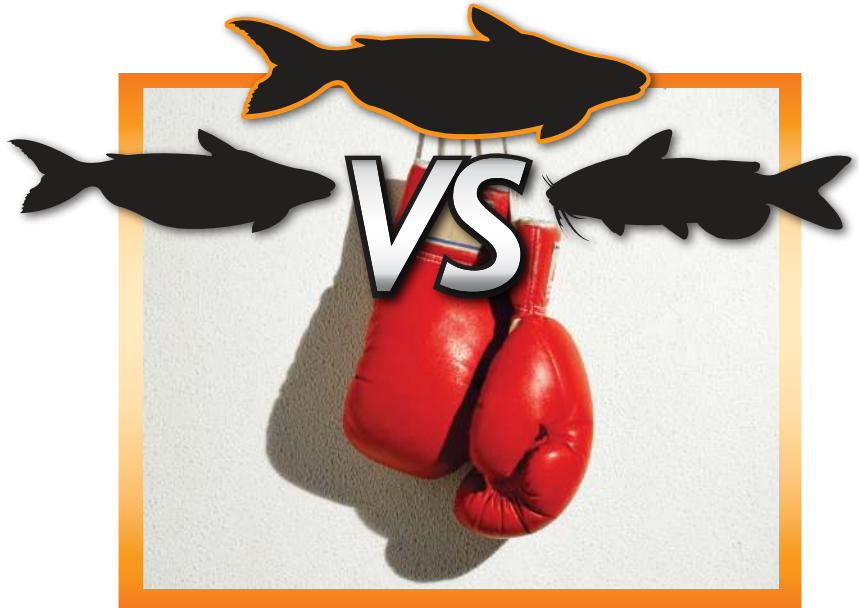
Historically, Vietnamese raised the Basa for food for the local market. As interest in exported fish fillets grew, farmers found that swai could be brought to market faster and more efficiently and that the foreign markets would accept the swai.

Today very little to no “true basa” is cultivated for export in Vietnam - it is exclusively swai.

According to United States Food and Drug Administration’s (USFDA) List of Common Fish Names, the name “catfish” should only apply to the species *ictalurus punctatus*. That species is also known as the American Channel Catfish.

The USFDA and U.S Department of Commerce have made this clarification in the use of the name “catfish” to prevent confusion between Channel Catfish and Swai.

Scientifically both are catfish but commercially one is “catfish” and one is “swai”.



*Year to date comparison is based on 02/2016 Uner Barry Monthly Aquaculture Insider's Report

History & Importance



*Swai is native to freshwater environments in Southeast Asia and has been an important food fish for local populations. A close relative of swai (*pangasianodon hypophthalmus*) is Basa (*pangasius bocourti*) that has a long history of being raised in cage systems by the river basin dwelling rural populations of countries such as Vietnam. Local people would fabricate cages from available materials; trap wild juvenile fish, feed with crudely processed feeds, and raise the fish to market size.*

In the 1990s as aquaculture for export was developed in Vietnam, Basa gave way to Swai as the more efficient and faster growing member of the local catfishes. Today very little to no “true basa” is cultivated for export in Vietnam - it is exclusively swai.

Vietnam has become the dominant producer of swai due to its ideal environment. The Mekong river system provides a huge volume of fresh water resource that is ideal for freshwater fish farming.

Today swai is an important export for the economy of southern Vietnam. It has reached 2 billion U.S. dollars in export volume in 2012. Swai products go to over one hundred different countries with Europe as the largest market.¹

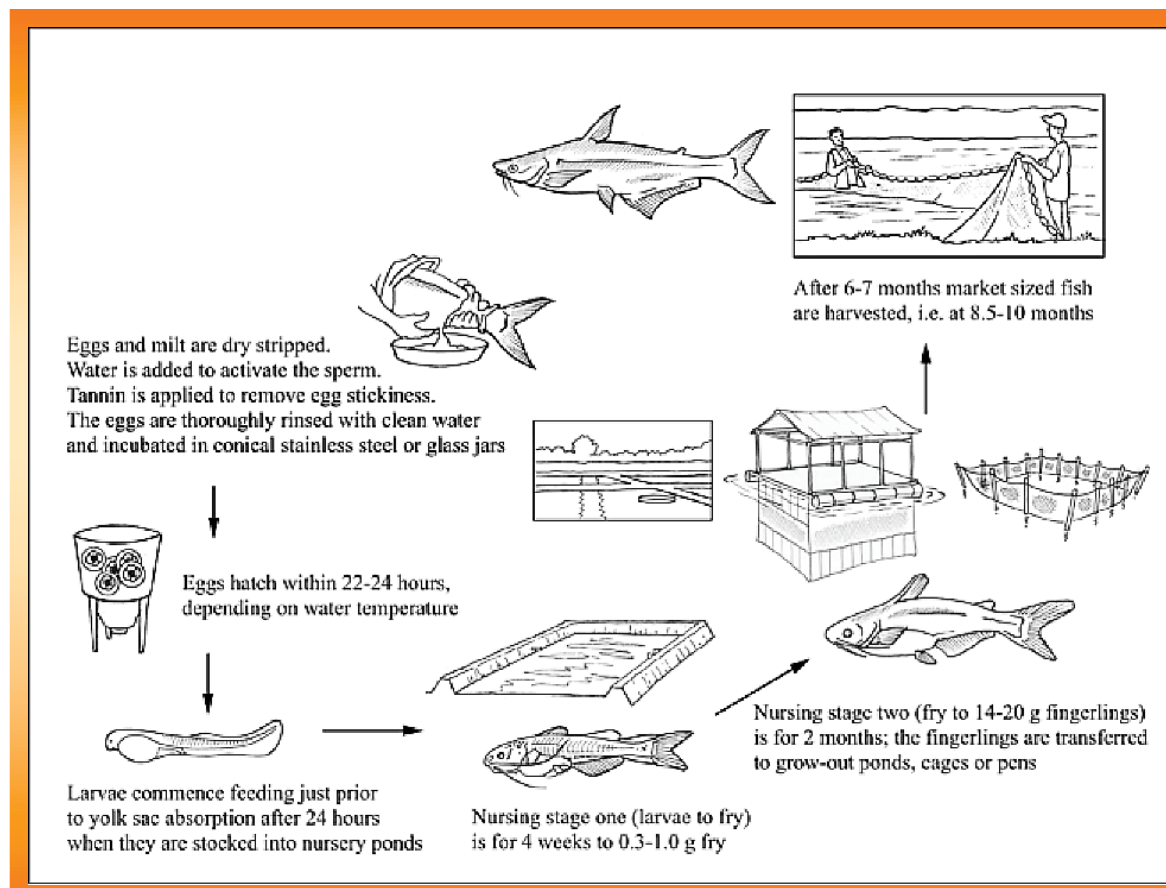
Growth Stages

Hatcheries take advantage of the swai's prolific breeding characteristics. A sexually mature female swai can produce as many as one million eggs.

At the age of three years for females and two years for males, swai are able to spawn two to three times per year in captivity.

Swai breeders are able to supply farmer with fingerlings of swai within three months of nursing. These 14-20 gram fish are suitable for stocking in ponds or cages.

With swai production unlike other freshwater fish farming such as tilapia, there is no need for juvenile fish to be separated by sex. Farmers will grow male and female fish together during the grow-out phase because the fish will be harvested before the age of reproduction.



Source: Food and Agriculture Organization of the United Nations Cultured Aquatic Species Information Programme

Grow Out

Floating Cage Systems

A floating cage system can take direct advantage of the Mekong River system. Cages can be built from bamboo, wood, or steel and nylon mesh netting. The cages float anchored in the moving water system that provides natural circulation and an environment similar to the natural habitat.

Cages are productive and were highly popular through the early-mid 2000 for farming of swai. But they are more costly to build than ponds and have mostly given way to pond-based farming. A typical cage can accommodate a grow-out density of about 100 - 120 kg/m³.



Pond Systems



Ponds are now the primary method for farming swai. Ponds provide large areas that can be tied into the river system to take advantage of ready river flow for water exchanges. Ponds are now dug to up to 3 meters to allow for increased density and efficient use of space. Swai can tolerate high densities and a single 10,000-m² pond can yield up to 500 metric tons of live fish with average yields of 300 metric tons.³

²Source: United Nations Food and Agriculture Organizations (FAO)'s "Cultured Aquatic Species Information Programme - Pangasius hypophthalmus."

³Source: Ibid

Feeds

As swai production has grown to become an important export sector, a stable and safe aquaculture feed supply has also developed. Gone are the days of farmers using agricultural waste and crudely made feeds.

These feeds realized a Feed Conversion Ratio (FCR) of only about 3 kg of feed to 1 kg of final live fish.

Today's feeds are manufactured to strict standards and include fishmeal, soybean meal, brans, oils, and vitamin mixes. Today's farmer can obtain efficient FCR of 1.7.

Major international companies such as Germany's Bayer have built large production facilities to sell high quality, consistent, and safe aquaculture feeds to the swai-farming sector.



Processing

Live fish are usually transported to the processing plants via river. Boats of 20-30 meters with hulls that allow water to enter are loaded with live fish and floated to processing plants built on the river banks. Fish are unloaded and processed into fillets.

Cut fillets are usually treated with a solution of sodium tripolyphosphate (STPP) and water to enhance the moisture retention property of the fish flesh.

The fillets are then frozen either in belt-style tunnel freezers or cabinet-style plate freezers.

The finished products may be held in cold storage for loading into refrigerated ocean freight containers for transport to the destination country.

Today's swai plants are sophisticated and substantial operations that can have an output of 2 million or more pounds of finished product per month.

These processing plants operate while meeting the USFDA's standard for fish processing. The (Hazard Analysis Critical Control Point) HACCP protocol for food safety implemented by all exporting facilities and should be verified by the importer of finished product.



The growth in production of swai and its widening use in the USA has caused an expansion in the availability of various specifications and levels of “value”. Swai specifications are not standardized by any official organizations. The solution for many buyers is to carefully look at brands and the companies that manage consistent production. Through careful selection of brand, a buyer can achieve consistency and avoid customer complaints.



Moisture Specification

One of the most important factors in swai quality is the amount of moisture addition to the fish during processing. As mentioned in the “Processing” section of this guide, STPP solutions can enhance the final swai products. A proper use of STPP solution will result in a swai with an optimized moist texture and palatable profile during final preparation.

Some facilities may use excessive amounts of additives to reduce the cost to the processor by diluting fillets with added moisture. This negatively affects the value of the swai. Most importantly, too high of an addition of STPP can cause the product to be undesirable in final preparations. It may become difficult to cook, maintaining a raw appearance. It may be rubbery and have off-tastes.

Since it is often unpractical for buyers to inspect every lot, many turn to brands and to suppliers with a high reputation.

Color

Swai flesh can range from bright white, off white, light pink, dark pink, and even yellowish. The color of the *swai* is determined by the overall health of the live fish. *Swai* is sensitive to build-ups of ammonia and nitrites in the grow-out environment. Excessive levels of these compounds can retard the function of the pituitary systems of the fish. The result is various meat colors.



“Premium” *swai* is considered to have white creamy to very slight pink coloration. *Swai* that is “brilliant” white or unnaturally white could have been treated with whitening agents in the factory during production.

Trimming

As *swai* entered the USA market, the processors strove to give it every opportunity to succeed by using what can be considered a “fully trimmed” presentation. With all bloodline removed and belly trimmed, the *swai* appealed to catfish buyers that were accustomed to that specification. As the *swai* market developed and become more price-competitive, processors will sometimes leave partial bloodline and belly on the fillets to increase yield and reduce cost.

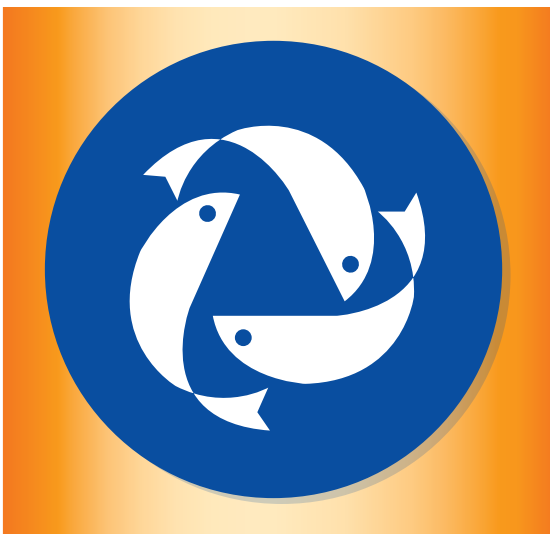


Swai has one unique issue in the belly fat of the fillet in that when exposed to direct heat during cooking, it can cause an off-flavor sometimes described as “eggy”. This can be unappealing to the consumer. To avoid the risk of upsetting consumers with off-flavor and poor appearance, buyers are relying on brands with consistent and reliable trim standards.

Packaging Options

As swai first was introduced into the USA as a catfish substitute, the packaging style followed suit. The 1x15lbs IQF is the most widely produced packaging option and follows the traditional catfish packaging in the US market. Other options include shatter-packs and retail bags.

One cautionary issue in packaging is the problem of “short-weight”. To lower costs, packers can count glaze weight in the total net weight of the case. This reduces the amount of fish given to the end user. Buyers protect themselves with testing procedures and reliance on high quality brands. It may also be important to note that shatter-packs produced without the need for protective glaze can be and sometimes are short-weight packed.



Environment - Certifications

The government agencies of Vietnam have been successfully active in controlling the use of improper aquaculture drugs. There are also directives to use settling ponds to gather pond waste to protect the river ecosystem. The primary export-oriented growing area for swai is along the Tien and Hau Rivers which are areas of the Mekong river Delta system, located west and upstream from the major urban center of Ho Chi Minh City. Relatively low population density and an absence of industrial activity ensures high water quality for fish farming.

Certifications from “third-party” organizations are becoming very common. Global Aquaculture Alliance (GAA) now inspects and certifies many swai-producing operations for adherence to Best Aquaculture Practices (BAP) and HACCP verification. World Wildlife Foundation (WWF) has also been active in developing standards for the swai farming sector. Many expect the Aquaculture Stewardship Counsel (ASC) standards to become more available in Vietnam in the future.

Catfish Wars - Legal Issues

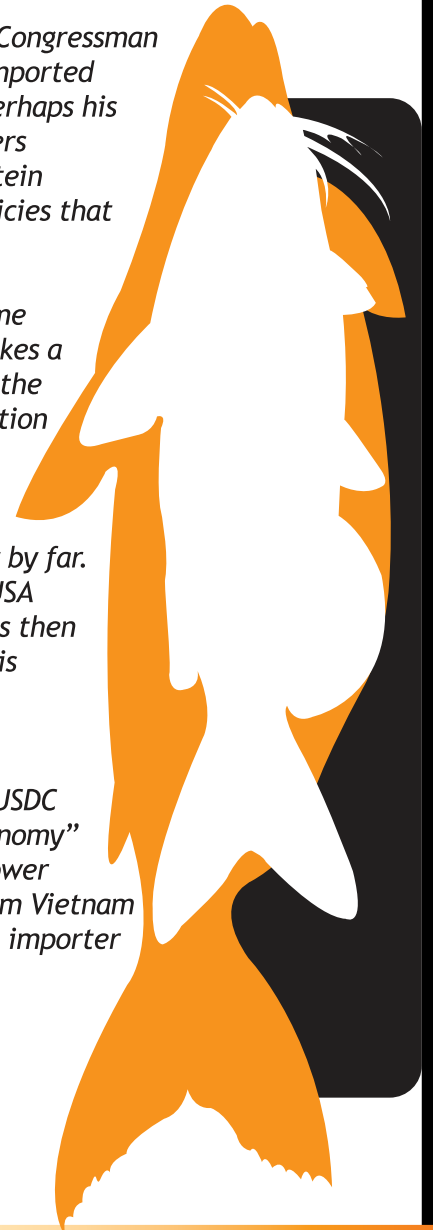
In 2004, the US Department of Commerce (USDOC) put into place an anti-dumping measure at the request of the Catfish Farmers of America (CFA) for catfish from Vietnam. The initial tariff rate was set to 63.88%. The move “froze” swai imports into the USA. After this event, Vietnamese companies moved to achieve lower anti-dumping rates than the 63.88% through individual petitions to the USDOC. Several Vietnamese companies were successful in showing that they could make sales that were at a price high enough not to be considered “dumping”. They were awarded greatly reduced anti-dumping rates ranging from 0-12%. When these rates were achieved, the swai market began to rebuild. The 2009 Farm Bill that passed and was signed into law in late 2008 contained provisions that were important to the swai industry. The bill mandated that the United States Department of Agriculture (USDA) assume inspection of all catfish in place of the USFDA who currently inspects all seafood products.

Many interested participants in the swai industry petitioned against this decision. Congressman Barney Franks wrote a letter of behalf of “Massachusetts companies that process imported seafood”. Senator John McCain has also been a critic of USDA oversight of swai. Perhaps his interests are on behalf of his state’s beef industry. The United States Meat Exporters Federation (USMEF) has recognized Vietnam as a major growth market for U.S. protein products and therefore has an interest in mutual trade policies and will oppose policies that could promote trade barriers.

USDA oversight would have meant that swai production would be subject to the same guidelines as the imports of beef, pork, and poultry. For these items, the USDA makes a determination that the inspection agency of the source country is at least equal to the USDA to allow imports. At this time, USDA does not consider Vietnam’s food inspection agency to be equivalent. The issue of anti-dumping with swai has led to some importers to buy “trans-shipped” swai to circumnavigate the antidumping tariff.

Only Swai from Vietnam is subject to the tariff and Vietnam is the largest producer by far. So to avoid the tariff and achieve a lower price, swai is sometimes shipped to the USA “through” another country such as Thailand, Malaysia, or Cambodia. The product is then labeled “Product of Thailand” for example and the tariff is avoided. This practice is highly illegal.

The import price of swai from Vietnam is analyzed by the USDC and compared to a production cost called a “surrogate value”. This surrogate value is created by the USDC using production costs from Bangladesh. USDC considers Bangladesh a “market economy” as opposed to Vietnam where government involvement in industry can result in a lower cost of production. The net effect of the anti-dumping is that the swai imports from Vietnam must enter the USA at a price equal to or higher than the “surrogate value”. If the importer does not maintain this level, they would be subject to anti-dumping tariffs.



What's In A Name?

“Swai” is one of the legal trade names of *pangasianodon hypothalamus*. Also acceptable by USDA is “Tra”, “Sutchi”, and “Striped Pangasius”. “Basa” is sometimes used as a trade name but it is not exactly proper. Basa refers to a close relative of swai that has the scientific name of *pangasius bocourti*. In the 1990s and early 2000s the intensive farming for export of pangasius was developing around basa. But by the early 2000s, farmers and processors had realized that the swai grew to market size in a month less time than the basa and that the new export market did not express a preference between the two. At this point in time the vast majority of pangasius is Swai not Basa. In October of 2014, US FDA updates Swai’s acceptable latin name to “*pangasianodon*” in place of “*pangasius*”.

Quantities Consumed

In 1995, it is estimated that 10,000 tons of swai were cultured in Vietnam. By 2008 that number had increased to 1,500,000 tons. Swai is sold to more than 130 countries globally. Before the antidumping measures were imposed in 2003, the United States was the major market for swai. The antidumping measure took the imports of swai into the USA from 80% of Vietnam’s production to 4%. This caused the Vietnamese producers to urgently seek new markets. Today even with the market in the US growing again, Europe remains the largest market for swai consumption. Eastern Europe, Russia, and Mexico are also large consumers.

Swai has grown immensely in the U.S. market. In 2009, swai debuted on the National Fisheries Institute’s (NFI) Top Ten Most Consumed Seafood. As of 2012, it had reached the number 6 position at .726 pounds per person of consumption. Swai has held the number 6 position on the most consumed list, and has grown its average weight of consumption to 0.89 pounds!

The Future

The rapid growth of *pangasianodon* has not always been beneficial to the farmers. Production of raw material in 2008 burst ahead of demand causing economic loss to farmers. As a result, in 2009 40% of ponds were left empty. As supply and demand even out, the ponds are likely to go back into service. This type of boom-bust cycle is likely to repeat as a “growing pain” of this industry. Overall, swai is predicted to continue to grow in consumption globally as it fits a universal desire for an affordable fish protein with a mild flavor. As stocks of wild caught species dwindle and rise in price, farm raised Swai becomes even more popular.

A real challenge for those who are active in purchasing swai is the determination of acceptable quality vs. necessary cost. As mentioned previously, chemical inclusion, trim specification, net weights, commodity markets, and other factors affect the purchasing decision. Each buyer must invest in the education of the issues to make the best business decision.

Top10 Most Consumed Species of Seafood in U.S.

2009	2010	2011	2012	2013	2014	2015	2016
1. Shrimp	1. Shrimp	1. Shrimp	1. Shrimp	1. Shrimp	1. Shrimp	1. Shrimp	1. Shrimp
2. Canned Tuna	2. Canned Tuna	2. Canned Tuna	2. Canned Tuna	2. Canned Tuna	2. Salmon	2. Salmon	2. Salmon
3. Salmon	3. Salmon	3. Salmon	3. Salmon	3. Salmon	3. Canned Tuna	3. Canned Tuna	3. Canned Tuna
4. Pollock	4. Tilapia	4. Pollock	4. Tilapia	4. Tilapia	4. Tilapia	4. Tilapia	4. Tilapia
5. Tilapia	5. Pollock	5. Tilapia	5. Pollock	5. Pollock	5. Pollock	5. Pollock	5. Pollock
6. Catfish	6. Catfish	6. Pangasius	6. Pangasius	6. Pangasius	6. Pangasius	6. Pangasius	6. Pangasius
7. Crab	7. Crab	7. Catfish	7. Crab	7. Cod	7. Cod	7. Cod	7. Cod
8. Cod	8. Cod	8. Crab	8. Cod	8. Catfish	8. Catfish	8. Crab	8. Catfish
9. Clams	9. Pangasius	9. Cod	9. Catfish	9. Crab	9. Crab	9. Catfish	9. Crab
10. Pangasius	10. Clams	10. Clams	10. Clams	10. Clams	10. Clams	10. Clams	10. Clams



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LET'S TALK FISH.